CLAIMS

What is claimed is:

1. A heat sink apparatus for an electronic component, comprising:

a substrate having a first hole extending between a first and second sides of the substrate;

a conductive layer attached to the second side; and

an electrically and thermally conductive heat sink having a protrusion, wherein the protrusion extends through the first hole, wherein the protrusion has a surface, wherein the electronic component is electrically connectable to the conductive layer, wherein a side of the electronic component is electrically and thermally connectable to the protrusion surface, and wherein one side of the area between the protrusion and the conductive layer is at least partially electrically shielded from the other.

2. The heat sink apparatus as recited in claim 1, wherein the apparatus is part of an integrated thick film microcircuit.

3. The heat sink apparatus as recited in claim 1, wherein the conductive layer and the heat sink are at ground potential.

4. The heat sink apparatus as recited in claim 1, wherein the protrusion surface is located at substantially the same level as that of the conductive layer.

5. The heat sink apparatus as recited in claim 1, wherein the heat sink apparatus provides at least partial electrical shielding for the electronic

component.

6. The heat sink apparatus as recited in claim 1, wherein the electronic component is at least partially integrally shielded.

7. The heat sink apparatus as recited in claim 1, wherein the heat sink is attached to the first side of the substrate.

8. The heat sink apparatus as recited in claim 1, wherein the electronic component is an electronic circuit.

9. The heat sink apparatus as recited in claim 1, wherein the electronic component is an integrated circuit.

10. The heat sink apparatus as recited in claim 1, wherein the electronic component is electrically and thermally connected to the protrusion surface at the side of the electronic component, wherein the electronic component is electrically connected to the conductive layer at the side of the electronic component, and wherein the at least partial electrical shielding is effected by the side of the electronic component.

11. The heat sink apparatus as recited in claim 10, wherein the conductive layer completely surrounds the first hole.

12. The heat sink apparatus as recited in claim 11, wherein the electronic component is electrically and thermally connected to the protrusion surface, wherein size and placement of the electronic component is such that the surface of the electronic circuit overlays a part of the conductive layer, fully overlays the protrusion surface, and fully overlays the area between the protrusion and the conductive layer, and wherein the electrical contact of the electronic component to the conductive layer fully

encircles the first hole.

13. The heat sink apparatus as recited in claim 1, further comprising an electrically conductive plate, wherein the plate is electrically connected to the conductive layer and to the protrusion surface.

14. The heat sink apparatus as recited in claim 13, wherein the conductive layer completely surrounds the first hole.

15. The heat sink apparatus as recited in claim 13, wherein a second hole extends through the electrically conductive plate.

16. The heat sink apparatus as recited in claim 15, wherein the conductive layer completely surrounds the first hole.

17. The heat sink apparatus as recited in claim 16, wherein the electronic component is mounted within the perimeter of the protrusion surface and within the perimeter of the second hole, wherein size and placement of the plate is such that a surface of the plate external to the second hole overlays a part of the conductive layer, a part of the protrusion surface, and fully overlays all area between the protrusion and the conductive layer, wherein the electrical contact of the plate to the conductive layer fully encircles the first hole, and wherein the electrical contact of the plate to the protrusion surface fully encircles the electronic component.